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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,795	04/30/2001	Marten Stjernstrom	P0214	3545

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EXAMINER	
HANDY, DWAYNE K	

ART UNIT	PAPER NUMBER
1743	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/830,795	STJERNSTROM, MARTEN	
	Examiner	Art Unit	
	Dwayne K Handy	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-12 and 14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-12 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 6-8, 10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Litborn (WO 98/33052) in view of Williams et al. (5,171,989). Litborn teaches a method of preventing evaporation from liquid samples in small volumes. The method includes providing a plate with wells for depositing a sample upon (the plate is best shown in Figure 1), depositing sample material into a well (called a vial in the reference) on a flat surface and covering the sample material in the well with a layer of a second solvent, allowing solvent containing the sample to evaporate, replacing the evaporated solvent with fresh solvent. This is shown in Figures 2A, 3A and 4. Figure 4 shows the deposition of a sample. Figures 2A and 3A show the continuous addition of a second solvent (or "covering liquid") to the sample. This

second solvent or covering liquid is immiscible with the fluid that contains the sample. This is noted in the Abstract and in claim 1. The process is described in Example 1 on page 16, lines 13-34 in reference to Figure 8. This section also includes the use of flow controlled micropumps attached to narrow bore capillaries for the addition of fluid to the wells. Litborn does not teach the use of a cover liquid that is miscible with the sample liquid. Litborn does, however, suggest that interaction between the covering and sample liquids may be required for adding and/or extracting compounds, reactants or products from the sample liquid. This is suggested in claims 10-13 as well as on pages 9, lines 23-35.

Williams et al. (5,171,989) teach a method and apparatus for the continuous production of samples for mass spectrometry analysis. The sample molecules are in an aqueous solution that contains one or more organic solvents. The sample is then directed through a capillary (161) where additional solvent is added in a continuous manner (column 3, lines 17-47). The additional solvent is miscible in water and is added in order to change the properties of the sample mixture. In the Examples given, the additional solvent is used to alter the freezing point of the sample mixture. In the claims, Williams teaches the addition of adding solvents as well (Claims 1, 2, and 5-7). Williams, then, teaches a method for sample loading in which the sample liquid is mixed with a miscible solvent for the purpose of changing a property of the sample mixture. It would have been obvious to one of ordinary skill in the art to combine the solvent addition teaching from Williams to the method of Litborn. As previously stated, Litborn teaches the use of an immiscible solvent as the cover layer in their method, but does

allow for interaction between the phases in the form of extracting products from the sample liquid or adding reactants from the added solvent. One would use the miscible solvent from Williams to change the properties of the sample liquid. Also, having a miscible solvent would allow for faster transfer of compounds between the two liquids since there would no longer be an interface between the two phases which slows diffusion between the phases. This would be advantageous in a reaction system.

3. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Litborn (WO 98/33052) and Williams et al. (5,171,989) as applied to claims 6-8, 10, 12 and 13 above, and further in view of Mian (6,319,469). Litborn and Williams, as described above in paragraph 3, teaches every element of claims 9 and 11 except for the microarea, microchannel, and reservoir being part of a microfluidic device and the step of anchoring the sample in the microarea. Mian teaches a microfluidic device used to analyze microsamples. The device is comprised of a microchannel network that is loaded through an array of input ports by a sample loader (column 26). The sample loader may be used in a dynamic manner (col. 26, lines 49-51), but the use of solvent is not mentioned. Mian teaches anchoring material in the device in column 38, lines 8-33. It would have been obvious to combine the teachings of Mian with the method of Litborn. One would add the teachings of Mian in order to use the analytical elements of their device. One would anchor the material in the channels or reservoirs in order identify sample material through the use of specific binding partners as taught by Mian.

Response to Arguments

4. Applicant's arguments, filed 7/16/2004, with respect to the rejection(s)of claim(s) 6,8,10,12,13 under Litborn have been fully considered and are persuasive. Applicant has amended claim 6 to recite the use of a replacement or additional solvent that is miscible with the sample containing solvent. This amendment was sufficient to overcome the 102 rejection under Litborn (WO 98/33052). Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Litborn and Williams. Please see paragraph 2 above.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ellson et al. (6,642,061) teach a method of ejecting fluids onto a substrate. Alajoki et al. (6,416,642) teach a method of continuous liquid flow in a microfluidic device. Orban (4,507,463) teaches a constant volume reaction in which the volume is controlled by the continual addition of solvent.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwayne K Handy whose telephone number is (571)-272-1259. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jill Warden
Supervisory Patent Examiner
Technology Center 1700

DKH
September 22, 2004